

1 We claim:

2 1. An apparatus for providing aquatic therapy and exercise
3 comprising:

4 a. A tank for retaining fluid, said tank having a front
5 end, a back end, a top near the fluid top when filled with fluid, and
6 a bottom between the two ends;

7 b. Treadmill means in said tank having driving means for
8 rotating the treadmill and having means for adjusting the speed of
9 rotation;

10 c. Means for lifting the treadmill in the tank from one
11 end of the tank.

12 2. The apparatus in claim 1 wherein the treadmill driving
13 means operate in conjunction with the end lift means.

14 3. An apparatus for providing aquatic therapy and exercise
15 comprising:

16 a. A tank for retaining fluid, said tank having a front
17 end, a back end, a top near the fluid top when filled with fluid, and
18 a bottom between the two ends;

19 b. Treadmill means in said tank having driving means for
20 rotating the treadmill, said driving means having at least one
21 flexible linkage having two ends about which the linkage rotates;

22 c. Means for lifting the treadmill in the tank said means
23 having at least two rigid supporting members pivotably connected at
24 a pivot point, and wherein one end of the treadmill driving means
25 rotates about the pivot point.

26 4. The apparatus in claim 3 wherein the means for lifting the
27 treadmill in the tank are located at one end of the tank.

28 5. The apparatus in claim 3 wherein the treadmill means have

1 means for adjusting the speed of the rotation of movement of the
2 treadmill.

3 6. The apparatus in claim 4 wherein the treadmill has means
4 for adjusting the speed of the rotation of the treadmill.

5 7. The apparatus in claim 4 wherein the tank has a plurality
6 of jet nozzles through which water flows at a desired rate of flow
7 into the tank.

8 8. The apparatus in claim 7 having means for adjusting the
9 water flow rate through the nozzles.

10 9. The apparatus in claim 8 wherein the means for controlling
11 the water flow rate through the nozzles is comprised of a water pump
12 pumping at a rate responsive to and determined by the electrical
13 power, and further having means for adjusting said power to the water
14 pump.

15 10. The apparatus in claim 6 wherein the tank has a plurality
16 of jet nozzles through which water flows at a desired rate of flow
17 into the tank.

18 11. The apparatus in claim 10 having means for adjusting the
19 water flow rate through the nozzles.

20 12. The apparatus in claim 11 wherein the means for controlling
21 the water flow rate through the nozzles is comprised of a water pump
22 pumping at a rate responsive and determined by the voltage, and
23 further having means for adjusting the voltage to the water pump.

24 13. The apparatus in claim 5 wherein the tank has a plurality
25 of jet nozzles through which water flows at a desired rate of flow
26 into the tank.

27 14. The apparatus in claim 13 having means for adjusting the
28 water flow rate through the nozzles.

1 15. The apparatus in claim 14 wherein the means for controlling
2 the water flow rate through the nozzles is comprised of a water pump
3 pumping at a rate responsive and determined by the voltage, and
4 further having means for adjusting the voltage to the water pump.

5 16. The apparatus in claim 15 wherein the treadmill has
6 adjustable impact absorption means.

7 17. The apparatus in claim 5 having means for monitoring the
8 speed of the treadmill, means for monitoring the desired chemical
9 requirements of the water, means for adjusting the chemical
10 requirements of the water, means for monitoring the rate of water
11 flow and means for electronically adjusting the same, memory and
12 electronic microprocessor means for recording and adjusting said
13 desired monitored items.

14 18. The apparatus in claim 17 having infrared remote control
15 means for operating the microprocessor control system.

16 19. The apparatus in claims 1, 2, 4, 6, 7, 8, 9, 10, 11, 12,
17 17, or 18 wherein the end lift means is comprised of a flexible
18 linkage having two ends, one of which is located at the end of the
19 treadmill and the other of which is located near the bottom of the
20 tank.

21 20. The apparatus in claim 18 having emergency stop means near
22 the top of the tank accessible for the user to instantly stop all
23 operating functions of the apparatus.

24 21. The apparatus in claims 17 or 18 having means for sensing
25 the desired system status and sending corresponding electrical
26 signals representing said respective status signals, means for
27 electrically isolating the sensing means from the microprocessor
28 control means, means electrically connected to the microprocessor for

1 storing said electrical status signals, output means connected to the
2 microprocessor for sending electrical control signals, means for
3 effecting the system status in response to the electrical control
4 signals; means for isolating the electrical sending means from the
5 means for effecting the system status.

6 22. The apparatus in claim 21 wherein the electrical isolation
7 means for converting the electrical signals to lightwave frequency
8 signals; means for receiving said lightwave frequency signals and
9 converting same back to electrical signals.

10 23. The apparatus in claim 21 wherein the electrical isolation
11 means is comprised of means for converting the electrical signals to
12 magnetic signals; means for receiving said magnetic signals and means
13 for decoding said magnetic signals and converting them to electrical
14 signals.

15 24. The apparatus in claims 1, 2, 4, 6, 7, 8, 9, 10, 11, 12
16 wherein the end lift means is comprised of a flexible linkage having
17 two ends, one of which is located at the end of the treadmill and the
18 other of which is located near the bottom of the tank, and having
19 means for sensing desired system status and sending corresponding
20 electrical signals representing said respective status signals, means
21 for electrically isolating the sensing means from the microprocessor
22 control means, means electrically connected to the microprocessor for
23 storing said electrical status signals, output means connected to the
24 microprocessor for sending electrical control signals, means for
25 effecting the system status in response to the electrical control
26 signals; means for isolating the electrical sending means from the
27 means for effecting the system status.

28 25. A method for controlling a hydrotherapy and exercise device

1 with integrated lift and treadmill means, said method comprised of
2 the steps of:

3 a. Sensing the various desired system characteristic at
4 the desired time;

5 b. Sending digital signals corresponding to the sensed
6 status to a microprocessor utilizing electrical isolation means;

7 c. Comparing said system status signals with desired
8 status using microprocessor means;

9 d. Sending signals from the microprocessor to effectuate
10 changes in the system characteristics;

11 e. Changing the system characteristics in response to the
12 electrical signals received from the microprocessor.

13 26. A method for controlling a hydrotherapy and exercise device
14 with integrated lift and treadmill means, said method comprised of
15 the steps of:

16 a. Sensing the level and speed of the treadmill and
17 chemical characteristics of the water.

18 b. Sending digital signals corresponding to the sensed
19 status to a microprocessor utilizing electrical isolation means;

20 c. Comparing said system status signals with desired
21 status using microprocessor means;

22 d. Sending signals from the microprocessor to effectuate
23 changes in the system characteristics;

24 e. Changing the system characteristics in response to the
25 electrical signals received from the microprocessor.

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